Docket No. POU920000191US1

In re application of: Christopher R. Vincent
Serial No.: 09/850,348
Filed: May 7, 2001
For: SCALABLE RESOURCE DISCOVERY
AND RECONFIGURATION FOR
DISTRIBUTED COMPUTER NETWORKS

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith, in triplicate, is Appellant's Brief in support of their appeal to the Board of Patent Appeals and Interferences from the Examiner's final rejection in the Office Action dated July 21, 2005.

[X] A petition for extension of time is hereby requested.

[X] The Commissioner is hereby authorized to charge payment to cover the filing fee to Deposit Account No. 50-1556.

[X] The Commissioner is hereby authorized to charge payment to cover the extension fee to Deposit Account No. 50-1556.

[X] The Commissioner is hereby authorized to charge payment of any necessary fees associated with this communication or credit any overpayment to Deposit Account No. 50-1556.

Respectfully submitted,

Date: July 13, 2006

Stephen Bongini
Registration No. 40,917

FLEIT, KAIN, GIBBONS,
GUTMAN, BONGINI & BIANCO P.L.
One Boca Commerce Center
551 Northwest 77th Street, Suite 111
Boca Raton, Florida 33487
Telephone: (561) 989-9811
Facsimile: (561) 989-9812

AP 2144

PATENT
POU920000191US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: CHRISTOPHER R. VINCENT Serial No.: 09/850,343 Confirmation No.: 2305 Filed: May 7, 2001 For: SCALABLE RESOURCE DISCOVERY AND RECONFIGURATION FOR DISTRIBUTED COMPUTER NETWORKS	Group Art Unit: 2144 Examiner: T. Phan

APPELLANT'S BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Appellant hereby respectfully submits his brief in support of his appeal to the Board of Patent Appeals and Interferences from the decision dated July 21, 2005 of the Examiner finally rejecting claims 1-20 of the above-referenced application.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450,

Alexandria, VA 22313-1450, on 7/13/06
Date of Deposit

Stephen Bongini
Appellant, Assignee, or Representative

Signature 7/13/06
Dated

1. REAL PARTY IN INTEREST

The real party in interest is International Business Machines Corporation (IBM) of Armonk, NY.

2. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

3. STATUS OF CLAIMS

Claims 1-20 are pending. Claims 1-20 were finally rejected in the Office Action dated July 21, 2005, and are on appeal.

The Claims Appendix contains a copy of claims 1-20, which are the claims involved in this appeal.

4. STATUS OF AMENDMENTS

A "Response After Final" was filed in response to the Office Action dated July 21, 2005. The Response After Final did not contain any amendments. In an Advisory Action dated May 26, 2006, the Examiner stated that the remarks contained in the Response After Final were considered but maintained the final rejection of claims 1-20.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to systems and methods for providing scalable resource discovery in a distributed computer network. One preferred embodiment of the present invention provides a method for discovering resources in a network of user nodes. [page 10, line 17 through page 13, line 3; Figs. 6-7] According to the method, a resource request to be published is received at a first user node of the network from one of the user nodes through a direct connection, and it is determined whether to send the resource request to a publish-subscribe server node or to send the resource request to another of the user nodes. [page 10, lines 20-24; page 11, lines 8-10] When it is determined to send the resource request to another of the user nodes, the resource request is forwarded from the first user node to a second user node of the

network. [page 11, lines 1-4] When it is determined to send the resource request to the publish-subscribe server node, the resource request is sent from the first user node to the publish-subscribe server node for publication to a plurality of the user nodes of the network. [page 11, lines 4-7]

Because resource requests are selectively forwarded through other user nodes rather than always being sent directly from the requesting user node to the publish-subscribe server node, requesting user nodes gain privacy. The actual user node that is requesting the resource remains anonymous to the server node, so the server node cannot keep track of which users are sharing (or even requesting) which resources. Further, the sending of the resource request to the publish-subscribe server node for publication via the publish-subscribe messaging infrastructure layer allows for efficient resource discovery in a network having a very large number of user nodes. Thus, scalability is achieved in a decentralized network while enhanced user privacy is provided. [page 12, line 21 through page 13, line 3]

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The rejection of claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Bracho et al. (U.S. Patent No. 6,021,443) in view of Jacobs et al. (U.S. Patent No. 6,732,237) and de Vries et al. (U.S. Patent No. 5,819,032).

7. ARGUMENT

CLAIMS 1-20 ARE PATENTABLE OVER BRACHO ET AL. IN VIEW OF JACOBS ET AL. AND DE VRIES ET AL.

Appellant respectfully submits that claims 1-20 are patentable over Bracho et al. in view of Jacobs and de Vries et al. because none of Bracho, Jacobs, and de Vries, or a combination thereof, teaches or suggests a method or system for discovering resources in which: (1) a resource request to be published is received at a first user node of the network from one of the user nodes through a direct connection, (2) it is determined whether to send the resource request

to a publish-subscribe server node or to send the resource request to another of the user nodes, or (3) the resource request is forwarded from the first user node to another user node when it is determined to send the resource request to another user node.

OVERVIEW OF THE CITED REFERENCES

The Bracho reference discloses a system and method for using hubs that are connected to a network to route events between publishers and subscribers. As shown in Figure 1, publishers 102, 110, and 166 and subscribers 104, 112, and 118 are connected to a network 120 through hubs 106, 108, and 114. Each publisher publishes events and each subscriber subscribes to receive events of certain types based on content. More specifically, each publisher and each subscriber is connected so as to be a client of one of the hubs, and the hubs are interconnected through the network. A publishers sends, via publication through the hubs, an advertisement to all subscribers to let the subscribers know the types of events that are published by that publisher. Based on the advertisements received, a subscriber sends one or more subscriptions to its local hub to subscriber to one or more types of events. A publisher publishes all its events by sending each event to its local hub. That hub sends the event to all local subscribers that have subscribed to events of that type, and also forwards the event to the other hubs so that each can send the event to all its local subscribers that have subscribed to events of that type.

Thus, in the publish-subscribe messaging system of Bracho, the interconnected hubs together form a "server cloud" that operates as the publish-subscribe server. See Applicant's specification at 7:22-8:2. Each publisher and each subscriber is a "user node" operated by a user (i.e., publisher user node or subscriber user node), and each of the user nodes is connected as a client of the publish-subscribe server (i.e., through a connection with one of the hubs of the server cloud). See Bracho at 5:35-38. The subscriber user nodes request certain types of events (i.e., data structures or other information) by sending subscriptions directly to the publish-subscribe server, and in response the publish-subscribe server sends the requested events, as they are published, to the appropriate subscriber user nodes.

The Jacobs reference discloses a system and method for caching data in which the consistency of the data is allowed to fluctuate in order to maintain a desired level of performance. More specifically, users 108 are coupled to a network 104 and a content server 106 is also coupled to the network 106 through a cache server 102, as shown in Figure 1. The users 108 submit requests for content to the cache server 102 via the network 104. In response to a content request, the cache server 102 determines if the requested content is present in its cache and marked valid, as shown in Figure 3.

If so, the cache server 102 responds to the content request by sending the content from its cache to the requesting user. If not, the cache server 102 either sends the content request to the content server 106 to obtain a valid version of the requested content or, if necessary to maintain the desired level of performance, sends to the requesting user an invalid version of the requested content from its cache. Thus, in the system of Jacobs, the cache server determines whether to pass a content request on to the content server, or to just return stale content to the requesting user in order to avoid the performance degradation that would occur if the content request was passed on to the content server.

The de Vries reference discloses a system for distributing an electronic magazine from a publisher to subscribers. Articles in the magazine are sent from the publisher's server and presented as article boxes on a graphical user interface that is shown on the user's display. To view comments for a particular article, the user activates the article box to open a second screen in the graphical user interface. The second screen contains the selected article box and comment boxes surrounding the article box. To add a comment for the article, the user locates a file containing the comment and drags the file icon for that file onto a submission icon on the graphical user interface. This causes the user's computer to send the selected comment file to the publisher's server. If accepted by the publisher, the user's comment is added to the article. Thus, in the system of de Vries, a user sends requests for articles and related comments to the publisher's server, and the publisher's server sends the requested articles and comments to the user's computer. Additionally, the user can send a comment to the publisher's server, and the publisher's server later sends this comment to other user's computers.

THE "RECEIVING" LIMITATION

Independent claim 1 recites a method for discovering resources in which a resource request to be published is received at a first user node of the network from one of the user nodes through a direct connection. Independent claim 9 contains similar recitations. Independent claim 17 recites a user node that includes a receiving interface for receiving a resource request to be published from one of the user nodes through a direct connection.

In embodiments of the present invention, a user node receives a resource request (that is to be published) from another user node through a direct connection. As used in the context of the present specification, a "resource request" is a request for a resource, such as a request for access to a file or other information stored on the network or a request for use of network hardware. See, e.g., Applicant's specification at 3:10-26. Further, Applicant submits that this is the ordinary meaning of "resource request" to one of ordinary skill in the art. The "receiving" limitation recited in the independent claims requires that such a "resource request" be received at one user node from another user node and that it is received through a direct connection between the two user nodes.

As recognized by the Examiner, Bracho does not disclose a system in which a resource request to be published is received at a first user node of the network from one of the user nodes through a direct connection. In the system of Bracho, no request is ever sent from one user node to another user node through a direct connection. The only requests of any type that are transmitted in the system of Bracho are subscription requests that request that certain types of events be sent to the subscriber user node. These subscription requests are only sent from the subscriber user nodes to the publish-subscribe server, and are never received by any user node from another user node through a direct connection. In other words, all requests are sent between a user node and the server, and are never sent between two user nodes.

In fact, in the system of Bracho the publisher user nodes only send information to the publish-subscribe server, and the subscriber user nodes only receive events and advertisements from the publish-subscribe server. No information is transmitted through direct connections

between user nodes (i.e., non-server nodes). Because no information is ever transmitted through direct connections between user nodes, Bracho cannot possibly disclose a system in which a "resource request" that requests resources is received at one user node from another user node through a direct connection between the user nodes.

The de Vries reference also fails to disclose a system in which a resource request to be published is received at a first user node of the network from one of the user nodes through a direct connection. In the system of de Vries, no request is ever sent from one user node to another user node through a direct connection. Two types of requests are transmitted in the system of de Vries: a request for an article or comment that is sent to request transmission of an article or a comment related to an article, and a request to submit a comment that used to submit a new comment for an article. Both of these types of requests are only sent from the subscriber user nodes to the publisher's server, and are never received by any user node from another user node through a direct connection. In other words, all requests are sent between a user node and the server, and are never sent between two user nodes.

In fact, in the system of de Vries the subscriber user nodes only send information to and receive information from the publish's server. No information is transmitted through direct connections between user nodes (i.e., non-server nodes). Because no information is ever transmitted through direct connections between user nodes, de Vries cannot possibly disclose a system in which a "resource request" that requests resources is received at one user node from another user node through a direct connection between the user nodes.

The Examiner has taken the position that the meaning of "direct connection" is not defined in the specification or known to one of ordinary skill in the art. This position of the Examiner is respectfully traversed. Applicant submits that the it is abundantly clear from the specification that sending information from one user node to another user node "through a direct connection" means that the information is sent through a direct peer-to-peer connection. See, e.g., specification at page 3, lines 23-26; page 7, lines 20-23; page 8, lines 3-8; page 10, lines 4-7;

page 12, lines 4-6. In other words, the information is communicated directly from one user node to the other user node without an intervening server that receives and forwards the message.

The entire specification is directed to the contrast between when node-to-node information is passed through an intervening server and when it is directly sent between the user nodes without any intervening server. For example, the specification begins by comparing and contrasting the different types of networks: a "client/server" network framework (page 2, lines 1-22), a "viral" network framework (page 2, line 23, through page 4, line 12), and a "publish-subscribe" network framework (page 4, line 13 through page 5, line 10). These descriptions clearly contrast the manner in which information is passed between two user nodes: in"client/server" and "publish-subscribe" networks information passes from user node to server and from server to user node, while in a "viral" network user nodes connect directly to one another and send information through these direct node-to-node connections (i.e., without the assistance of a server).

Thus, the definition of "direct connection" is clear from the specification. Further, Applicants submit that, at least in light of the specification, one of ordinary skill in the art would clearly understand that information sent from one user node to another user node "through a direct connection" means that the information is communicated directly from the one user node to the other user node without an intervening server that receives and forwards the message. Therefore, the Examiner must use this definition of the term "direct connection" in evaluating the claims.

Bracho, Jacobs, and de Vries, and a combination thereof, fail to teach or suggest a method or system for discovering resources in which a resource request to be published is received at a first user node of the network from one of the user nodes through a direct connection.

THE "DETERMINING" LIMITATION

Independent claim 1 recites a method for discovering resources in which it is determined whether to send the resource request to a publish-subscribe server node or to send the resource request to another of the user nodes. Independent claim 9 contains similar recitations.

Independent claim 17 recites a user node that includes control means for deciding whether to send the resource request to the publish-subscribe server node or to send the resource request to another of the user nodes.

In embodiments of the present invention, it is determined whether to send the resource request (to be published), which is received at the first user node, to a publish-subscribe server node or to another user node. The "determining" limitation recited in the independent claims requires that there is made a decision whether to send the "resource request" either to a publish-subscribe server node or to another user node. Because there is made this determination of whether to send the resource request to the server or to send the resource request to another user node, instead of just always sending the resource request directly to the server node, the requesting user node gains privacy.

As recognized by the Examiner, Bracho does not disclose a system in which it is ever decided whether to send a resource request either to the publish-subscribe server node or to another user node. In the system of Bracho, the publish-subscribe server always sends both advertisements and events to the subscriber user nodes. The publisher user nodes always send events to the publish-subscribe server, and the subscriber user nodes always send subscription requests to the publish-subscribe server. Thus, advertisements, subscription requests, and events are always sent from a user node to the server or from the server to a user node. In the system of Bracho, it is never decided whether to send any information, let alone a "resource request" that is received at a user node, to either the server or to another user node. Bracho does not disclose a system in which it is determined whether to send a resource request to the server or to another user node.

The Jacobs reference also fails to disclose a system in which it is ever decided whether to send a resource request either to the publish-subscribe server node or to another user node. In the system of Jacobs, the cache server receives a content request. In response to the received content request, the cache server determines whether to send that content request on to the content server

or to send (a stale version of) the requested content to the requesting user. In other words, the determination made by the cache server is whether to send the request to the server or to send the requested content, and not the content request itself, to the requesting user. The cache server never determines whether to send a received content request to either the server or another user node. Jacobs does not disclose a system in which it is determined whether to send a resource request to the server or to send that request to another user node.

The Examiner has taken the position that this limitation is met because the system of Bracho determines to send the request to another user node. This position of the Examiner is respectfully traversed. This claim limitation does not state an alternative in which either one action or another action is performed. Instead, this claim limitation states that a determination is made between following two options. Thus, this limitation requires that a decision be made. Further, the required decision must be whether to send the request to a publish-subscribe server node or to send that request to another user node. This limitation is not met by a server merely determining that a request should be sent to a user node. This is very different from making a determination (i.e., decision) whether to send a request to a server node or instead to send that request to another user node. In the system of Bracho, there is never a determination made of whether to send any information, let alone a "resource request" that is received at a user node, to either the server or to another user node.

Bracho, Jacobs, and de Vries, and a combination thereof, fail to teach or suggest a method or system for discovering resources in which it is determined whether to send the resource request to a publish-subscribe server node or to send the resource request to another of the user nodes.

THE "FORWARDING" LIMITATION

Independent claim 1 recites a method for discovering resources in which the resource request is forwarded from the first user node to another user node when it is determined to send the resource request to another user node. Independent claim 9 contains similar recitations.

Independent claim 17 recites a user node that includes a transmitting interface that forwards the resource request to another user node when the control means decides to send the resource request to another user node.

In embodiments of the present invention, a resource request (to be published), which is received at the first user node, is forwarded from the first user node to another user node when it is determined to send the resource request to another user node. The "forwarding" limitation recited in the independent claims requires that, when it is determined in the determination process described above to send the "resource request" to another user node, the "resource request" is forwarded from the user node that received the request to another user node of the network. Because the resource request is selectively forwarded (based on the outcome of the determination process) to another user node rather than just always being sent directly to the publish-subscribe server node, the requesting user node gains privacy.

As recognized by the Examiner, Bracho does not disclose a system in which a resource request to be published is forwarded from one user node to another user node when it is determined to send the resource request to another user node. However, the Examiner went on to state that the Jacobs reference makes up for this deficiency in the disclosure of Bracho by disclosing such a feature. This position of the Examiner is respectfully traversed.

The Jacobs reference also fails to disclose a system in which, when it is determined to send a resource request to another user node, the resource request is forwarded from one user node to another user node. In the system of Jacobs, the cache server receives a content request and determines whether to send that content request on to the content server or to send (a stale version of) the requested content to the requesting user. Based on the outcome of this determination, the cache server either sends the received content request on to the content server or sends (a stale version of) the actual content requested in the content request to the requesting user. In other words, the cache server selectively sends the requested content, and not the content request itself, to the requesting user. The cache server never sends a received content request to a

user node. Jacobs does not disclose a system in which, when it is determined to send a resource request to another user node, the resource request is forwarded from one user node to another user node.

Bracho, Jacobs, and de Vries, and a combination thereof, fail to teach or suggest a method or system for discovering resources in which the resource request is forwarded from the first user node to another user node when it is determined to send the resource request to another user node.

In view of the foregoing, it is respectfully submitted that the application and the claims are in condition for allowance. Reversal of the final rejection of claims 1-20 is respectfully requested.

Respectfully submitted,

Date: July 13, 2006

By: _____

Stephen Bongini
Registration No. 40,917
Attorney for Appellant

FLEIT, KAIN, GIBBONS,
GUTMAN, BONGINI & BIANCO P.L.
One Boca Commerce Center
551 Northwest 77th Street, Suite 111
Boca Raton, Florida 33487
Telephone: (561) 989-9811
Facsimile: (561) 989-9812

8. CLAIMS APPENDIX

1. A method for discovering resources in a network of user nodes, said method comprising the steps of:

receiving, at a first user node of the network from one of the user nodes through a direct connection, a resource request to be published;

determining whether to send the resource request to a publish-subscribe server node or to send the resource request to another of the user nodes;

forwarding the resource request from the first user node to a second user node of the network, when it is determined to send the resource request to another of the user nodes; and

sending the resource request from the first user node to the publish-subscribe server node for publication to a plurality of the user nodes of the network, when it is determined to send the resource request to the publish-subscribe server node.

2. The method as defined in claim 1, wherein in the determining step, the determination of whether to send the resource request to the publish-subscribe server node or to send the resource request to another of the user nodes is a random decision made by the first user node.

3. The method as defined in claim 2, wherein in the determining step, the random decision is made based on a weighting factor corresponding to the probability that the first user node will decide to send the resource request to the publish-subscribe server node.

4. The method as defined in claim 1, wherein the forwarding step includes the sub-steps of:

randomly selecting one of the user nodes to which the first user node is connected to be the second user node; and

forwarding the resource request from the first user node to the second user node through a direct connection.

5. The method as defined in claim 1, further comprising the step of sending, via publication from the publish-subscribe server node, the resource request to at least some of the user nodes of the network.

6. The method as defined in claim 5, wherein in the step of sending via publication from the publish-subscribe server node, the publish-subscribe server node sends the resource request to all of the user nodes of the network that are subscribed to one or more resource request channels.

7. The method as defined in claim 1, further comprising the step of repeating the steps of determining and forwarding until in the determining step a user node that received the resource request decides to send the resource request to the publish-subscribe server node.

8. The method as defined in claim 1, further comprising the step of:

sending the resource request to be published from a requesting user node, which desires the request resource, to the first user node through a direct connection.

9. A machine-readable medium encoded with a program for discovering resources in a network of user nodes, said program containing instructions for performing the steps of:

receiving, at a first user node of the network from one of the user nodes through a direct connection, a resource request to be published;

determining whether to send the resource request to a publish-subscribe server node or to send the resource request to another of the user nodes;

forwarding the resource request from the first user node to a second user node of the network, when it is determined to send the resource request to another of the user nodes; and

sending the resource request from the first user node to the publish-subscribe server node for publication to a plurality of the user nodes of the network, when it is determined to send the resource request to the publish-subscribe server node.

10. The machine-readable medium as defined in claim 9, wherein in the determining step, the determination of whether to send the resource request to the publish-subscribe server node or to send the resource request to another of the user nodes is a random decision made by the first user node.

11. The machine-readable medium as defined in claim 10, wherein in the determining step, the random decision is made based on a weighting factor corresponding to the probability that the first user node will decide to send the resource request to the publish-subscribe server node.

12. The machine-readable medium as defined in claim 9, wherein the forwarding step includes the sub-steps of:

randomly selecting one of the user nodes to which the first user node is connected to be the second user node; and

forwarding the resource request from the first user node to the second user node through a direct connection.

13. The machine-readable medium as defined in claim 9, wherein said program further contains instructions for performing the step of sending, via publication from the publish-subscribe server node, the resource request to at least some of the user nodes of the network.

14. The machine-readable medium as defined in claim 13, wherein in the step of sending via publication from the publish-subscribe server node, the publish-subscribe server node sends the resource request to all of the user nodes of the network that are subscribed to one or more resource request channels.

15. The machine-readable medium as defined in claim 9, wherein said program further contains instructions for performing the step of repeating the steps of determining and forwarding until in the determining step a user node that received the resource request decides to send the resource request to the publish-subscribe server node.

16. The machine-readable medium as defined in claim 9, wherein said program further contains instructions for performing the step of:

sending the resource request to be published from a requesting user node, which desires the request resource, to the first user node through a direct connection.

17. A user node for use in a computer network that includes a plurality of user nodes and at least one publish-subscribe server node, with each of the user nodes being connected to at least one other user node through a direct connection, said user node comprising:

a receiving interface for receiving, from one of the user nodes through a direct connection, a resource request to be published;

control means for deciding whether to send the resource request to the publish-subscribe server node or to send the resource request to another of the user nodes; and

at least one transmitting interface for selectively forwarding the resource request to a second user node of the network or sending the resource request to the publish-subscribe server node for publication,

wherein the transmitting interface forwards the resource request to the second user node when the control means decides to send the resource request to another of the user nodes, and sends the resource request to the publish-subscribe server node for publication to a plurality of the user nodes of the network when the control means decides to send the resource request to the publish-subscribe server node for publication.

18. The user node as defined in claim 17, wherein the control means randomly decides whether to send the resource request to the publish-subscribe server node or to send the resource request to another of the user nodes.

19. The user node as defined in claim 18, wherein the control means randomly decides based on a weighting factor.

20. The user node as defined in claim 17, wherein the control means randomly selects one of the other user nodes of the network to be the second user node to which the resource request is forwarded.

9. EVIDENCE APPENDIX

NONE

10. RELATED PROCEEDINGS APPENDIX

NONE